## The influence of different thermal treatments on the antioxidant capacity and oxidative stability of virgin olive oil

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The aim of this study was to determine the influence of the method of heat transfer to the olive paste before malaxation on the antioxidant capacity and oxidative stability of VOO of the Croatian autochthonous variety Oblica.

One of the problems in virgin olive oil (VOO) production, besides the relatively low extraction yield, is the loss of bioactive compounds that remain in the by-products. The temperature of the olive paste could influence the activity of endogenous enzymes of the olive fruit, which can improve the quality of the final product.

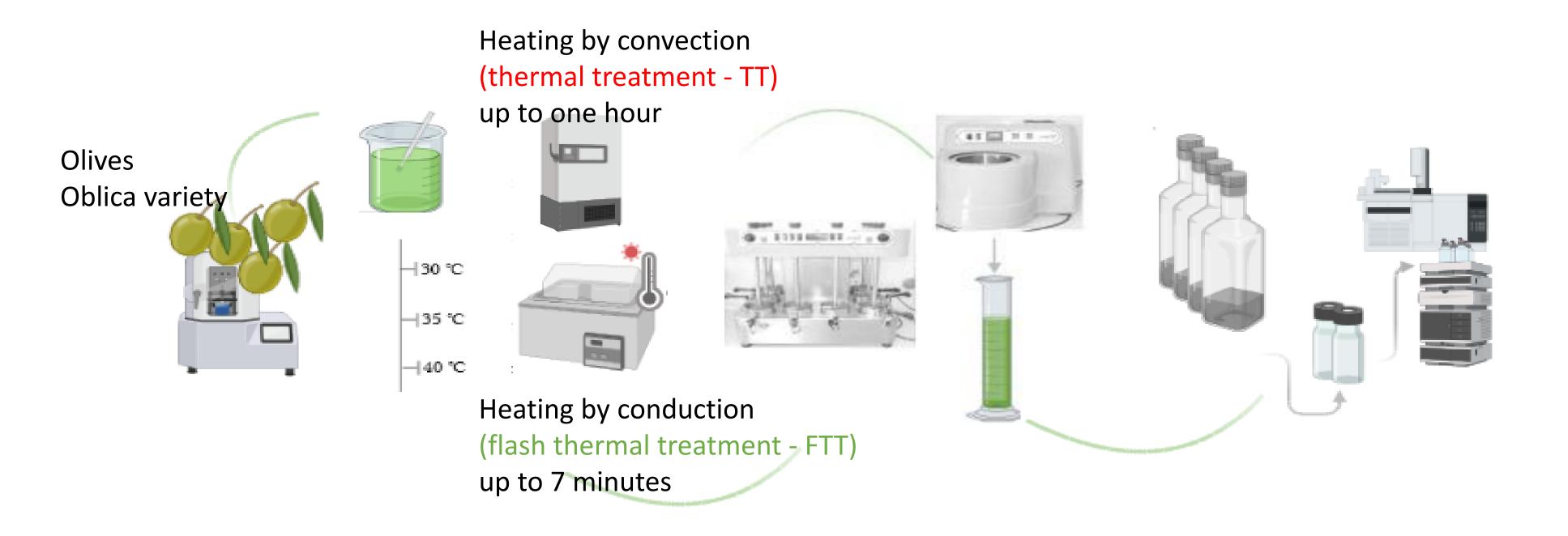


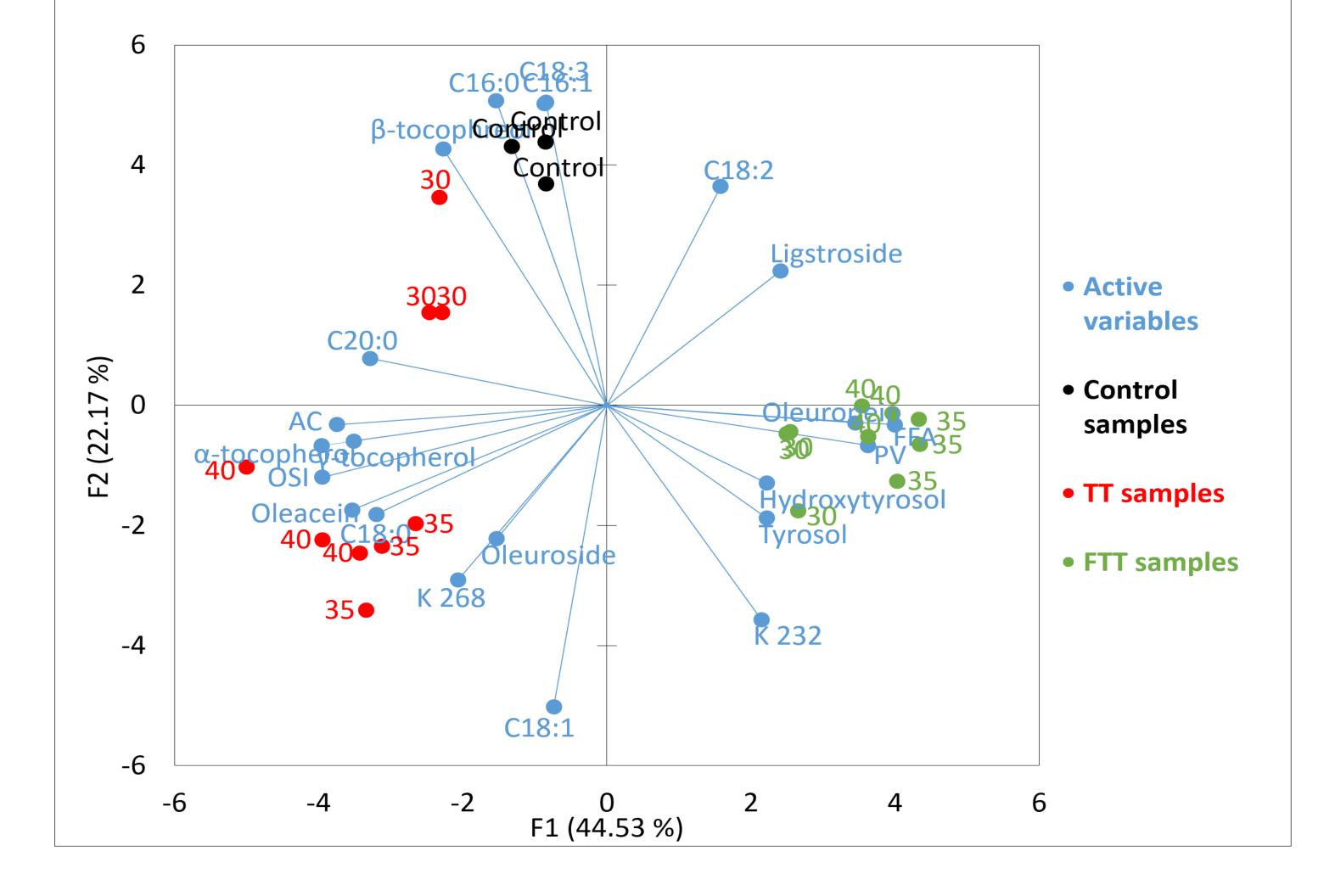
Figure 1. The experimental set up

## **VOO** analysis:

- Oil quality parameters standard methods
- Fatty acid composition GC
- Phenolic compounds RF/HPLC
- Tocopherols NF/HPLC
- Antioxidant capacity (AC) DPPH<sup>•</sup> red. by *electron spin* resonance spectroscopy
- Oxidative stability index (OSI) *differential scanning* calorimetry (DSC)

## Conclusions

The quality and composition of VOO are strongly influenced by the heating method. FTT-heated oil samples had higher levels of primary oxidation products (PV and K 268) and higher concentrations of hydroxytyrosol, tyrosol, oleuropein, and ligstroside. TT-heated samples contained higher amounts of secondary oxidation products, as expected, but also higher amounts of total phenolic compounds and tocopherols and consequently higher antioxidant capacity and better oxidative stability. These results suggest that the standard heating is more suitable for the production of an oil with hinger smounts of bioactive compounds. However, a sensory analysis of the oil should also be performed, since it is known that higher temperatures have a negative effect on the sensory quality of the VOO.



Results

Figure 2. PCA plots (PC1 vs. PC2) of analized variables and VOO samples



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